

Substitute for form 1449/PTO

*(Use as many sheets as necessary)*

**Complete if Known**

|                        |                         |
|------------------------|-------------------------|
| Application Number     | Not yet assigned        |
| Filing Date            | March 19, 2004          |
| First Named Inventor   | Jonathan J. Wierer, Jr. |
| Art Unit               | Not yet assigned        |
| Examiner Name          | Not yet assigned        |
| Attorney Docket Number | LUM-03-05-01            |

[illegible]

|                       |  |                    |  |
|-----------------------|--|--------------------|--|
| Examiner<br>Signature |  | Date<br>Considered |  |
|-----------------------|--|--------------------|--|

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. <sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449/PTO

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT***(Use as many sheets as necessary)***Complete if Known**

|       |  |    |  |                        |                     |
|-------|--|----|--|------------------------|---------------------|
| Sheet |  | of |  | Application Number     | Not yet assigned    |
|       |  |    |  | Filing Date            | March 19, 2004      |
|       |  |    |  | First Named Inventor   | Jonathan J. Wierer, |
|       |  |    |  | Art Unit               | Not yet assigned    |
|       |  |    |  | Examiner Name          | Not yet assigned    |
|       |  |    |  | Attorney Docket Number | LUM-03-05-01        |

**NON PATENT LITERATURE DOCUMENTS**

| Examiner Initials* | Cite No. <sup>1</sup> | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. | T <sup>2</sup> |
|--------------------|-----------------------|---|----------------|
|                    |                       | P.A. KOHL, "Photoelectrochemical etching of semiconductors", IBM J. Res. Develop., Vol. 42, No. 5, 5 September 1998, pp. 629-637.   |                |
|                    |                       | Chen-Fu CHU et al., "Comparison of p-Side Down and p-Side Up GaN Light-Emitting Diodes Fabricated by Laser Lift-Off", Jpn. J. Appl. Phys., Vol. 42 (2003), Part 2, NO. 2B, 15 February 2003, pp. L147-L150.   |                |
|                    |                       | W.S. WONG et al., "InxGa1-xN light emitting diodes on Si substrates fabricated by Pd-In metal bonding and laser lift-off", Applied Physics Letters, Vol. 77, No. 18, 30 October 2000, pp. 2822-2824.  |                |
|                    |                       | H. BENISTY et al., "Impact of Planar Microcavity Effects on Light Extraction - Part I: Basic Concepts and Analytical Trends", IEEE Journal of Quantum Electronics, Vol. 34, No. 9, September 1998, pp. 1612-1631.   |                |
|                    |                       | T. FUJII et al., "Increase in the extraction efficiency of GaN-based light-emitting diodes via surface roughening", Applied Physics Letters, Vol. 84, No. 6, 9 February 2004, pp. 855-857.  |                |
|                    |                       | Y.-K. SONG et al., "Resonant-cavity InGaN quantum-well blue light-emitting diodes", Applied Physics Letters, Vol. 77, No. 12, 18 September 2000, pp. 1744-1746.   |                |
|                    |                       | Michael R. KRAMES et al., U.S. Application No. 10/059,588, filed January 28, 2002, entitled: "LED Efficiency Using Photonic Crystal Structure". 62 pages.   |                |
|                    |                       | Jonathan J. Wierer Jr., U.S. Application No. 10/691,026 filed 10/21/03, entitled: "Photonic Crystal Light Emitting Device", 30 pages.   |                |
|                    |                       |   |                |
|                    |                       |   |                |

|                    |  |                 |  |
|--------------------|--|-----------------|--|
| Examiner Signature |  | Date Considered |  |
|--------------------|--|-----------------|--|

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1 Applicant's unique citation designation number (optional). 2 Applicant is to place a check mark here if English language Translation is attached. This collection of information is required by 37 CFR 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.